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EXAMINER	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/791,854	HAN ET AL.	
	Examiner	Art Unit	
	Katherine Turner	4132	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-37* is/are pending in the application.

4a) Of the above claim(s) *3,9-11,18,24,25,36 and 37* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,4-8,12-17,19-23,26-35* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *04 March 2004* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *3/4/2004, 1/26/2007*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of Species Group I, Species A1; Species Group II, Species B1; and Species Group III, Species C2 in the reply filed on 04/25/2008 is acknowledged. The traversal is on the ground(s) that the subject matter of the group overlap and must be simultaneously examined, that the fields of search are coextensive, that it appears that the restriction requirement was being imposed merely for administrative convenience, and that there is no serious burden upon the Examiner in searching the invention encompassing all groups.

This is not found persuasive because the groups require a serious burden upon the Examiner in searching the different species from the groups, because they are in separate fields of search.

Burden may be established when the species fall into a different field of search. A different field of search is defined in the MPEP as: where it is necessary to search for one of the inventions in a manner that is not likely to result in finding art pertinent to the other invention(s) (e.g., searching different classes /subclasses or electronic resources, or employing different search queries, a different field of search is shown, even though the two are classified together. The indicated different field of search must in fact be pertinent to the type of subject matter covered by the claims. Patents need not be cited to show different fields of search. See MPEP 808.02.

The species within the groups require different search query. Species Group I, Species A1 requires a search query related to the cross-section on the inside of the can

being greater than that of the outside, while Species Group I, Species A2 requires a search query related to the cross-section on the outside of the can being greater than that of the inside of the can. Species Group II, Species B1 requires a search query for sloping cross-section, while Species Group II, Species B2 requires a search query for stepped portion cross-section. Species Group III, Species C1 requires a search query related to the position of the second electrode tab near the electrolyte inlet, while Species Group III, Species C2 requires a search query related to the position of the second electrode tab near the vent. The separate search queries would require separate fields of search, that would not overlap or be simultaneously examined, and that poses a serious burden upon the Examiner in searching.

There is serious burden upon the Examiner in searching the invention, because there is a different field of search for the species, therefore the restriction requirement was not being imposed merely for administrative convenience.

The requirement is still deemed proper and is therefore made FINAL.

2. The claims which are represented by each species were incorrectly established in the original restriction requirement mailed out on 02/11/2008. In that original restriction requirement each of the species was established by a reciting claim language, and therefore the correct claims which are represented by each species can be established.

Species Group I

Species A1, appears to be claims 2, 17, 29, and 30 (elected)

Species A2, appears to be claims 3, and 18 (non-elected)

Species Group II

Species B1, appears to be claims 8, 23, and 35 (elected)

Species B2, appears to be claims 9-10, 24-25, and 36-37 (non-elected)

Species Group III

Species C1, appears to be claim 11 (non-elected)

Species C2, appears to be claims 12-14 (elected)

Consequently, claims 1-2, 4-8, 12-17, 19-23, and 26-35 are all included within the elected Species Group I, Species A1; Species Group II, Species B1; and Species Group III, Species C2.

3. Claims 3, 9-11, 18, 24-25, and 36-37 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected Species Group I, Species A2; Species Group II, Species B2; and Species Group III, Species C1, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 04/25/2008.

Priority

4. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

5. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "32" has been used to designate both terminal pin and first electrode tab ([0042], line 7).

6. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: "43" designated as insulating plate in specification ([0061]).

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

7. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Rejections - 35 USC § 112

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 1, 2, 6, 12, 13, 14, 16, 17, 21, 26, 28, 29, and 33 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 1, 2, 17, and 29, the claims recite the limitation of the electrolytic solution inlet having an area on one surface of the cap plate being larger than the area on another surface of the cap plate. One cannot determine the metes and bounds of the claim, because it is unclear as to what the area of the electrolytic solution inlet on a surface is referring to. For the purpose of prosecution the limitations are being interpreted as the cross-section of the electrolytic solution inlet has a larger width at one surface than the other surface of the cap plate.

Regarding Claims 6, 21, and 33, claims appear to be indefinite because it is unclear how one linear channel can be arranged spirally in the neighborhood of the injection hole.

Regarding claims 12 and 14, it is unclear what Applicant intends for essential structural cooperative relationships between the second electrode tab, electrolytic solution inlet, terminal pin, and safety vent. The language used by Applicant does not clearly point out this structural relationship. The limitation "a position opposite...with respect to" does not present a clear understanding of the structural cooperative relationships. For the purpose of prosecution this limitation is interpreted to mean, a position on the opposite side of the cap plate from the electrolytic solution inlet with the terminal pin in between the second electrode tab and the electrolytic solution inlet.

Regarding claims 13 and 26, it is unclear what Applicant intends for essential structural cooperative relationships between the second electrode tab, electrolytic solution inlet, terminal pin, and safety vent. The language used by Applicant does not clearly point out this structural relationship. The limitation "a position opposite...with

respect to" does not present a clear understanding of the structural cooperative relationships. For the purpose of prosecution this limitation is interpreted to mean, a position on the opposite side of the cap plate from the terminal pin with the second electrode tab in between the safety vent and the terminal pin (claims 13 and 26).

Regarding claims 16 and 28, the claims recite the limitation of the injection hole having an area on one surface of the insulating plate being larger than the area on another surface of the insulating plate. One cannot determine the metes and bounds of the claim, because it is unclear as to what the area of the injection hole on a surface is referring to. For the purpose of prosecution the limitations are being interpreted as the cross-section of the injection hole has a larger width at one surface than the other surface of the insulating plate.

Regarding claims 17, and 29, the claims recite the limitation of the injection hole having an area on one surface of the cap plate being larger than the area on another surface of the cap plate. One cannot determine the metes and bounds of the claim, because it is unclear as to what the area of the injection hole on a surface is referring to. For the purpose of prosecution the limitations are being interpreted as the cross-section of the injection hole has a larger width at one surface than the other surface of the cap plate.

Claims depending from claims rejected under 35 USC 112, second paragraph are also rejected for the same.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

12. Claims 1, 2,and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Osamu et al. (JP 2000-208130, refer to IPDL JPO machine translation) in view of Pfeiffer (DE 3339933, refer to abstract for cited information).

As to claims 1, 2, and 8, Osamu teaches a secondary battery ([0013]) comprising:

- an electrode body (2) (Applicant's unit) having a positive electrode sheet and a negative electrode sheet (Applicant's first and second electrode plates), a separator interposed therebetween, and two electric conduction tabs (4 and 5) (Applicant's first and second electrode tabs) respectively drawn upward (Applicant's extending from) the positive electrode sheet and the negative

electrode sheet (Applicant's first and second electrode plates) (drawing 2; [0013]);

- a cell case (1) (Applicant's can) adapted to accommodate the electrode unit and electrolysis solution (Applicant's electrolytic solution); and
- a lid (6) (Applicant's cap plate) adapted to seal the can ([0002], lines 1-2) and having an injection hole (14) for electrolysis solutions (Applicant's electrolytic solution inlet) (drawing 2; [0015])

Osamu is silent as to the injection hole (14) for electrolysis solutions (Applicant's electrolytic solution inlet) having an area on one surface of the cap plate different from that on another surface of the cap plate or the injection hole having a sloping cross section.

Pfeiffer teaches a liquid drop-propelling nozzle (10) which is utilized as a liquid inlet from outside to inside a chamber. This drop-propelling nozzle's (10) chamber wall widens out conically from the edge of the nozzle opening (at the surface of the outside of the chamber). Pfeiffer's liquid drop-propelling nozzle (10) (Applicant's inlet) has an area on one surface of the top of the chamber (Applicant's cap plate) different from that on another surface of the top of the chamber (Applicant's cap plate). Pfeiffer teaches that the opening size as well as the conicity of the drop-propelling nozzle's (10) chamber wall can be chosen in dependence on the viscosity of the liquid to be sprayed out (Abstract). Spraying liquids causes them to be more uniformly distributed to the space that they are sprayed into.

Osamu and Pfeiffer are analogous art because they are both concerned with a similar problem solving area, namely, using inlets for introducing liquids into a container.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize Pfeiffer's conical shape (Applicant's an area on one surface of the cap plate different from that on another surface of the cap plate) for Osamu's inlet, because Pfeiffer's conical shape would spray Osamu's electrolysis solution into the cell case (1) which would more uniformly distribute Osamu's electrolysis solution.

13. Claims 4-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Osamu et al. in view of Pfeiffer as applied to claim 1 above, and further in view of Uba (US 4,421,832).

Regarding claims 4-6, Osamu modified by Pfeiffer teaches an injection hole (14) for electrolysis solutions (Applicant's electrolytic solution inlet), but is silent as to further comprising a channel.

Uba teaches channels (36) adapted to facilitate injection of an electrolyte (Applicant's electrolytic solution) in the neighborhood of the central vent opening (42) whereby electrolyte is delivered (Applicant's electrolytic solution inlet). One end of the channels (36) is connected to the central vent opening (42) whereby electrolyte is delivered (Applicant's electrolytic solution inlet). The channels (36) are linearly shaped and arranged radially (Applicant's spirally) in the neighborhood of the central vent opening (42) whereby electrolyte is delivered (Applicant's electrolytic solution inlet)

(figures 4 and 6; column 3, lines 51-60). Uba teaches that because of these channels the electrolyte is distributed uniformly to the cell (column 3, lines 35-39 and lines 56-60).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize Uba's channels with the injection hole (14) of Osamu modified by Pfeiffer for electrolysis solutions (Applicant's electrolytic solution inlet), because these channels cause the electrolyte to be distributed uniformly to the cell, as taught by Uba (column 3, lines 56-60).

14. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Osamu et al., in view of Pfeiffer, and Uba as applied to claim 4 above, and further in view of Planchat (US 4,735,630).

Osamu et al. in view of Pfeiffer and Uba teaches an injection hole (14) for electrolysis solutions (Applicant's electrolytic solution inlet) with Uba's channels (36). Uba teaches that these channels are 1/8 inch, which is 3 mm (column 5, lines 28-30).

Planchat teaches channels (31 and 34) used to disperse electrolyte from an electrolyte inlet orifice (30) (Applicant's electrolytic solution inlet) are 0.2 to 0.3 mm in depth, which falls within Applicant's range of 0.1 to 0.5 mm (figure 3; column 3, lines 28-39). Planchat teaches that the shapes and depths of the channels are chosen in order to obtain a uniform flowrate, and that the configuration having channels at this depth ensures that electrolyte is uniformly distributed (column 3, lines 14-45).

It would have been obvious to one of ordinary skill in the art at the time the invention was made for to have the depth of channels of Osamu et al. as modified by Pfeiffer and Uba to be 0.2 to 0.3 mm, because the depths of the channels are chosen in

order to obtain a uniform flowrate, and that the configuration having channels at this depth ensures that electrolyte is uniformly distributed, as taught by Planchat (column 3, lines 14-45).

15. Claims 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Osamu et al. in view of Pfeiffer as applied to claim 1 above, and further in view of Masumoto et al. (WO/2003/003485, refer to English equivalent US 2003/0180582 for cited information).

Regarding claim 12, Osamu modified by Pfeiffer teaches the electric conduction tab (5) (Applicant's first electrode tab) is electrically connected to the negative pole output terminal (9) (Applicant's terminal pin). The electrical connection is the electric conduction tab (5) (Applicant's first electrode tab) being welded to the pressure plate (10), which is attached to the negative pole output terminal (9) (Applicant's terminal pin) (drawings 1-2; [0018]; [0019]). The negative pole output terminal (9) (Applicant's terminal pin) is connected to the lid (6) (Applicant's cap plate) and arranged to be insulated therefrom with electric insulating plate (11) and gasket (8) (drawing 1; [0018]). The electric conduction tab (4) (Applicant's second electrode tab) is welded to the inner surface of the lid (6) (Applicant's cap plate) (drawing 2; [0019]) at a position in between the injection hole (14) for electrolysis solutions (Applicant's electrolytic solution inlet) and the negative pole output terminal (9) (Applicant's terminal pin) (drawing 2).

Osamu modified by Pfeiffer is silent as to the electric conduction tab (4) (Applicant's second electrode tab) being welded to the lid (6) (Applicant's cap plate) at a

position opposite to the electrolytic solution inlet with respect to the negative pole output terminal (9) (Applicant's terminal pin).

Masumoto teaches a positive lead plate (4) (Applicant's second electrode tab) being soldered (Applicant's welded) to the sealing plate (23) (Applicant's cap plate) opposite to the electrolyte injection hole (filled with plug 27) (Applicant's electrolytic solution inlet) with respect to the negative electrode rivet (25) (Applicant's terminal pin) (figures 2B and 11A; [0064]; [0077]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to rearrange Osamu's electric conduction tab (4) (Applicant's second electrode tab) to the arrangement of Masumoto's positive lead plate (4) (Applicant's second electrode tab), with Osamu's electric conduction tab (4) (Applicant's second electrode tab) being welded to the lid (6) (Applicant's cap plate) at a position opposite to the electrolytic solution inlet with respect to the negative pole output terminal (9) (Applicant's terminal pin), because it is a known arrangement in the art, as taught by Masumoto, and since it has been held that rearranging parts of an invention involves only routine skill in the art. *In re Japikse*, 86 USPQ 70. See MPEP 2144.

Regarding claim 13, Osamu modified by Pfeiffer teaches a cleavage vent (13) (Applicant safety vent) arranged at a position opposite to the negative pole output terminal (9) (Applicant's terminal pin), and the cleavage vent (13) (Applicant safety vent) being adapted to rupture when the internal pressure of the sealed case (Applicant's can) exceeds constant value (Applicant's increases to a level greater than a predetermined allowed level) (drawing 2; [0015]). Osamu modified by Pfeiffer is silent as to the

cleavage vent (13) (Applicant safety vent) being arranged at a position opposite to the negative pole output terminal (9) (Applicant's terminal pin) with respect to the electric conduction tab (4) (Applicant's second electrode tab) of the lid (6) (Applicant's cap plate).

Masumoto teaches a vent hole (20a) (Applicant's safety vent) being arranged at a position opposite to the negative electrode rivet (25) (Applicant's terminal pin) with respect to the positive lead plate (4) (Applicant's second electrode tab) of the sealing plate (23) (Applicant's cap plate) (figures 2B and 11A; [0064]; [0071]; [0077]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to rearrange Osamu's electric conduction tab (4) (Applicant's second electrode tab) to the arrangement of Masumoto's positive lead plate (4) (Applicant's second electrode tab), with Osamu's cleavage vent (13) (Applicant safety vent) being arranged at a position opposite to the negative pole output terminal (9) (Applicant's terminal pin) with respect to the electric conduction tab (4) (Applicant's second electrode tab) of the lid (6) (Applicant's cap plate), because it is a known arrangement in the art, as taught by Masumoto, and since it has been held that rearranging parts of an invention involves only routine skill in the art. *In re Japikse*, 86 USPQ 70. See MPEP 2144.

16. Claim 14 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Osamu et al. in view of Masumoto et al.

Osamu teaches a secondary battery ([0013]) comprising:

- an electrode body (2) (Applicant's unit) having a positive electrode sheet and a negative electrode sheet (Applicant's first and second electrode plates), a separator interposed therebetween, and two electric conduction tabs (4 and 5) (Applicant's first and second electrode tabs) respectively drawn upward (Applicant's extending from) the positive electrode sheet and the negative electrode sheet (Applicant's first and second electrode plates) (drawing 2; [0013]);
- a cell case (1) (Applicant's can) adapted to accommodate the electrode unit and electrolysis solution (Applicant's electrolytic solution);
- a lid (6) (Applicant's cap plate) adapted to seal the can ([0002], lines 1-2);
- a negative pole output terminal (9) (Applicant's terminal pin) connected so as to be insulated from the lid (6) (Applicant's cap plate) with electric insulating plate (11) and gasket (8) (drawing 1; [0018]), to which the electric conduction tab (5) (Applicant's first electrode tab) is electrically connected. The electrical connection is the electric conduction tab (5) (Applicant's first electrode tab) being welded to the pressure plate (10), which is attached to the negative pole output terminal (9) (Applicant's terminal pin) (drawings 1-2; [0018]; [0019]); and
- an electric insulating plate (11) is provided on an inner surface of the lid (6) (Applicant's cap plate) and extending in one direction of the lid (6) (Applicant's cap plate) and arranged to insulate the negative pole output terminal (9) (Applicant's terminal pin) from the lid (6) (Applicant's cap plate) (drawings 1-2; [0018]);

- wherein the electric conduction tab (4) (Applicant's second electrode tab) is welded to the inner surface of the lid (6) (Applicant's cap plate) (drawing 2; [0019]) at a position in between the injection hole (14) for electrolysis solutions (Applicant's electrolytic solution inlet) and the negative pole output terminal (9) (Applicant's terminal pin) (drawing 2).

Osamu is silent as to the electric conduction tab (4) (Applicant's second electrode tab) being welded to the lid (6) (Applicant's cap plate) at a position opposite to the electrolytic solution inlet with respect to the negative pole output terminal (9) (Applicant's terminal pin).

Masumoto teaches a positive lead plate (4) (Applicant's second electrode tab) being soldered (Applicant's welded) to the sealing plate (23) (Applicant's cap plate) opposite to the electrolyte injection hole (filled with plug 27) (Applicant's electrolytic solution inlet) with respect to the negative electrode rivet (25) (Applicant's terminal pin) (figures 2B and 11A; [0064]; [0077]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to rearrange Osamu's electric conduction tab (4) (Applicant's second electrode tab) to the arrangement of Masumoto's positive lead plate (4) (Applicant's second electrode tab), with Osamu's electric conduction tab (4) (Applicant's second electrode tab) being welded to the lid (6) (Applicant's cap plate) at a position opposite to the electrolytic solution inlet with respect to the negative pole output terminal (9) (Applicant's terminal pin), because it is a known arrangement in the art, as taught by

Masumoto, and since it has been held that rearranging parts of an invention involves only routine skill in the art. *In re Japikse*, 86 USPQ 70. See MPEP 2144.

Regarding claim 26, Osamu teaches a cleavage vent (13) (Applicant safety vent) arranged at a position opposite to the negative pole output terminal (9) (Applicant's terminal pin), and the cleavage vent (13) (Applicant safety vent) being adapted to rupture when the internal pressure of the sealed case (Applicant's can) exceeds constant value (Applicant's increases to a level greater than a predetermined allowed level) (drawing 2; [0015]). Osamu is silent as to the cleavage vent (13) (Applicant safety vent) being arranged at a position opposite to the negative pole output terminal (9) (Applicant's terminal pin) with respect to the electric conduction tab (4) (Applicant's second electrode tab) of the lid (6) (Applicant's cap plate).

Masumoto teaches a vent hole (20a) (Applicant's safety vent) being arranged at a position opposite to the negative electrode rivet (25) (Applicant's terminal pin) with respect to the positive lead plate (4) (Applicant's second electrode tab) of the sealing plate (23) (Applicant's cap plate) (figures 2B and 11A; [0064]; [0071]; [0077]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to rearrange Osamu's electric conduction tab (4) (Applicant's second electrode tab) to the arrangement of Masumoto's positive lead plate (4) (Applicant's second electrode tab), with Osamu's cleavage vent (13) (Applicant safety vent) being arranged at a position opposite to the negative pole output terminal (9) (Applicant's terminal pin) with respect to the electric conduction tab (4) (Applicant's second electrode tab) of the lid (6) (Applicant's cap plate), because it is a known

arrangement in the art, as taught by Masumoto, and since it has been held that rearranging parts of an invention involves only routine skill in the art. *In re Japikse*, 86 USPQ 70. See MPEP 2144.

17. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Osamu et al. in view of Masumoto et al. as applied to claim 14 above, and further in view of Yamahira et al. (US 2002/0012829).

Osamu modified by Masumoto teaches an electric insulating plate (11) is provided on an inner surface of the lid (6) (Applicant's cap plate) and extending in one direction of the lid (6) (Applicant's cap plate) (drawings 1-2; [0018]), but is silent as to the injection hole (14) for electrolysis solutions (Applicant's electrolytic solution inlet) arranged to overlap the electric insulating plate (11), and an injection hole corresponding to the injection hole (14) for electrolysis solutions (Applicant's electrolytic solution inlet) arranged in the electric insulating plate (11).

Yamahira teaches a solution injection port (45) (Applicant's electrolytic solution inlet) arranged to overlap the gasket (43) (Applicant's insulating plate), and an injection hole corresponding to the solution injection port (45) (Applicant's electrolytic solution inlet) arranged in the gasket (43) (Applicant's insulating plate) (figure12; [0057]; [0058]; [0059]). Yamahira teaches that this overlapping is done in order to provide a step aimed at assuring sufficient resistance against the force applied at the time of welding the solution injection port (45) (Applicant's electrolytic solution inlet) (figure12; [0059]).

Osamu also teaches that the injection hole (14) for electrolysis solutions (Applicant's electrolytic solution inlet) is welded ([0015]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to extend Osamu's electric insulating plate in the direction of Osamu's injection hole (14) for electrolysis solutions (Applicant's electrolytic solution inlet) in order to utilize Yamahira's gasket (43) (Applicant's insulating plate) setup which overlaps the solution injection port (45) (Applicant's electrolytic solution inlet) with a corresponding injection hole at Osamu's injection hole (14) for electrolysis solutions (Applicant's electrolytic solution inlet), because this overlapping is done in order to provide a step aimed at assuring sufficient resistance against the force applied at the time of welding the solution injection port (45) (Applicant's electrolytic solution inlet), as taught by Yamahira (figure12; [0059]).

18. Claims 16-17 and 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Osamu et al. in view of Masumoto et al., and Yamahira et al. as applied to claim 15 above, and further in view of Uba.

Regarding claim 16 and 17, Osamu in view of Masumoto and Yamahira teach an injection hole in Osamu's electric insulating plate (11) overlapping Osamu's injection hole (14) for electrolysis solutions (Applicant's electrolytic solution inlet), but is silent as to one surface of the electric insulating plate (11) being greater than another surface of the electric insulating plate (11).

Uba teaches channels (36) adapted to facilitate injection of an electrolyte (Applicant's electrolytic solution) in the neighborhood of the central vent opening (42) whereby electrolyte is delivered (Applicant's electrolytic solution inlet). Uba teaches that

because of these channels the electrolyte is distributed uniformly to the cell (figures 4 and 6; column 3, lines 35-39 and lines 56-60).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize Uba's channels with Osamu's injection hole (14) for electrolysis solutions (Applicant's electrolytic solution inlet), because these channels cause the electrolyte to be distributed uniformly to the cell, as taught by Uba (column 3, lines 56-60).

Once these channels are in Osamu's electric insulating plate (11) the injection hole would have an area on the surface facing the inside of the case (1) (Applicant's can) greater than that on a surface facing the outside of the case (1) (Applicant's can).

Regarding claims 19-21, Osamu in view of Masumoto and Yamahira teach an injection hole in Osamu's electric insulating plate (11) overlapping Osamu's injection hole (14) for electrolysis solutions (Applicant's electrolytic solution inlet), but is silent as to further comprising a channel.

Uba teaches channels (36) adapted to facilitate injection of an electrolyte (Applicant's electrolytic solution) in the neighborhood of the central vent opening (42) whereby electrolyte is delivered (Applicant's electrolytic solution inlet). One end of the channels (36) is connected to the central vent opening (42) whereby electrolyte is delivered (Applicant's electrolytic solution inlet). The channels (36) are linearly shaped and arranged radially (Applicant's spirally) in the neighborhood of the central vent opening (42) whereby electrolyte is delivered (Applicant's electrolytic solution inlet)

(figures 4 and 6; column 3, lines 51-60). Uba teaches that because of these channels the electrolyte is distributed uniformly to the cell (column 3, lines 35-39 and lines 56-60).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize Uba's channels with Osamu's injection hole (14) for electrolysis solutions (Applicant's electrolytic solution inlet), because these channels cause the electrolyte to be distributed uniformly to the cell, as taught by Uba (column 3, lines 56-60).

19. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Osamu et al. in view of Masumoto et al., Yamahira et al., and Uba as applied to claim 19 above, and further in view of Planchat.

Osamu et al. in view of Masumoto, Yamahira, and Uba teach Yamahira's injection hole with Uba's channels (36). Uba teaches that these channels are 1/8 inch in depth, which is 3 mm (column 5, lines 28-30).

Planchat teaches channels (31 and 34) used to disperse electrolyte from an electrolyte inlet orifice (30) (Applicant's electrolytic solution inlet) are 0.2 to 0.3 mm, which falls within Applicant's range of 0.1 to 0.5 mm (figure 3; column 3, lines 28-39). Planchat teaches that the shapes and depths of the channels are chosen in order to obtain a uniform flowrate, and that the configuration having channels at this depth ensures that electrolyte is uniformly distributed (column 3, lines 14-45).

It would have been obvious to one of ordinary skill in the art at the time the invention was made for Osamu et al. in view of Uba's channels to substitute Uba's depth of 3 mm for Planchat's depth 0.2 to 0.3 mm, because the shapes of the channels

are chosen in order to obtain a uniform flowrate, and that the configuration having channels at this depth ensures that electrolyte is uniformly distributed, as taught by Planchat (column 3, lines 14-45).

20. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Osamu et al. in view of Masumoto et al., and Yamahira et al. as applied to claim 15 above, and further in view of Pfeiffer.

Osamu in view of Masumoto et al. and Yamahira teach an injection hole overlapping the injection hole (14) for electrolysis solutions (Applicant's electrolytic solution inlet), but is silent as to the injection hole having a sloping cross-section.

Pfeiffer teaches a liquid drop-propelling nozzle (10) which is utilized as a liquid inlet from outside to inside a chamber. This drop-propelling nozzle's (10) chamber wall widens out conically from the edge of the nozzle opening (at the surface of the outside of the chamber). Pfeiffer's liquid drop-propelling nozzle (10) (Applicant's inlet) has an area on one surface of the top of the chamber (Applicant's cap plate) different from that on another surface of the top of the chamber (Applicant's cap plate). Pfeiffer teaches that the opening size as well as the conicity of the drop-propelling nozzle's (10) chamber wall can be chosen in dependence on the viscosity of the liquid to be sprayed out (Abstract). Spraying liquids causes them to be more uniformly distributed to the space that they are sprayed into.

Osamu and Pfeiffer are analogous art because they are both concerned with a similar problem solving area, namely, using inlets for introducing liquids into a container.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize Pfeiffer's conical shape (Applicant's an area on one surface of the cap plate different from that on another surface of the cap plate) for Osamu in view of Yamahira's injection hole, because Osamu and Pfeiffer are both teaching about liquid inlets, and Pfeiffer's conical shape would spray Osamu's electrolysis solution into the cell case (1) which would more uniformly distribute Osamu's electrolysis solution.

21. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Osamu et al. in view of Masumoto et al. and Yamahira et al.

Osamu teaches a secondary battery ([0013]) comprising:

- an electrode body (2) (Applicant's unit) having a positive electrode sheet and a negative electrode sheet (Applicant's first and second electrode plates), a separator interposed therebetween, and two electric conduction tabs (4 and 5) (Applicant's first and second electrode tabs) respectively drawn upward (Applicant's extending from) the positive electrode sheet and the negative electrode sheet (Applicant's first and second electrode plates) (drawing 2; [0013]);
- a cell case (1) (Applicant's can) adapted to accommodate the electrode unit and electrolysis solution (Applicant's electrolytic solution);
- a lid (6) (Applicant's cap plate) adapted to seal the can ([0002], lines 1-2);
- a negative pole output terminal (9) (Applicant's terminal pin) connected so as to be insulated from the lid (6) (Applicant's cap plate) with electric insulating plate

(11) and gasket (8) (drawing 1; [0018]), to which the electric conduction tab (5) (Applicant's first electrode tab) is electrically connected. The electrical connection is the electric conduction tab (5) (Applicant's first electrode tab) being welded to the pressure plate (10), which is attached to the negative pole output terminal (9) (Applicant's terminal pin) (drawings 1-2; [0018]; [0019]); and

- an electric insulating plate (11) is provided on an inner surface of the lid (6) (Applicant's cap plate) and extending in one direction of the lid (6) (Applicant's cap plate) and arranged to insulate the negative pole output terminal (9) (Applicant's terminal pin) from the lid (6) (Applicant's cap plate) (drawings 1-2; [0018]);
- wherein the electric conduction tab (4) (Applicant's second electrode tab) is welded to the inner surface of the lid (6) (Applicant's cap plate) (drawing 2; [0019]) at a position in between the injection hole (14) for electrolysis solutions (Applicant's electrolytic solution inlet) and the negative pole output terminal (9) (Applicant's terminal pin) (drawing 2).

Osamu is silent as to the electric conduction tab (4) (Applicant's second electrode tab) being welded to the lid (6) (Applicant's cap plate) at a position opposite to the electrolytic solution inlet with respect to the negative pole output terminal (9) (Applicant's terminal pin).

Masumoto teaches a positive lead plate (4) (Applicant's second electrode tab) being soldered (Applicant's welded) to the sealing plate (23) (Applicant's cap plate) opposite to the electrolyte injection hole (filled with plug 27) (Applicant's electrolytic

solution inlet) with respect to the negative electrode rivet (25) (Applicant's terminal pin) (figures 2B and 11A; [0064]; [0077]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to rearrange Osamu's electric conduction tab (4) (Applicant's second electrode tab) to the arrangement of Masumoto's positive lead plate (4) (Applicant's second electrode tab), with Osamu's electric conduction tab (4) (Applicant's second electrode tab) being welded to the lid (6) (Applicant's cap plate) at a position opposite to the electrolytic solution inlet with respect to the negative pole output terminal (9) (Applicant's terminal pin), because it is a known arrangement in the art, as taught by Masumoto, and since it has been held that rearranging parts of an invention involves only routine skill in the art. *In re Japikse*, 86 USPQ 70. See MPEP 2144.

Osamu teaches an electric insulating plate (11) is provided on an inner surface of the lid (6) (Applicant's cap plate) and extending in one direction of the lid (6) (Applicant's cap plate) (drawings 1-2; [0018]), but is silent as to the injection hole (14) for electrolysis solutions (Applicant's electrolytic solution inlet) arranged to overlap the electric insulating plate (11), and an injection hole corresponding to the injection hole (14) for electrolysis solutions (Applicant's electrolytic solution inlet) arranged in the electric insulating plate (11).

Yamahira teaches a solution injection port (45) (Applicant's electrolytic solution inlet) arranged to overlap the gasket (43) (Applicant's insulating plate), and an injection hole corresponding to the solution injection port (45) (Applicant's electrolytic solution inlet) arranged in the gasket (43) (Applicant's insulating plate) (figure12; [0057]; [0058];

[0059]). Yamahira teaches that this overlapping is done in order to provide a step aimed at assuring sufficient resistance against the force applied at the time of welding the solution injection port (45) (Applicant's electrolytic solution inlet) (figure12; [0059]).

Osamu also teaches that the injection hole (14) for electrolysis solutions (Applicant's electrolytic solution inlet) is welded ([0015]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to extend Osamu's electric insulating plate in the direction of Osamu's injection hole (14) for electrolysis solutions (Applicant's electrolytic solution inlet) in order to utilize Yamahira's gasket (43) (Applicant's insulating plate) setup which overlaps the solution injection port (45) (Applicant's electrolytic solution inlet) with a corresponding injection hole at Osamu's injection hole (14) for electrolysis solutions (Applicant's electrolytic solution inlet), because this overlapping is done in order to provide a step aimed at assuring sufficient resistance against the force applied at the time of welding the solution injection port (45) (Applicant's electrolytic solution inlet), as taught by Yamahira (figure12; [0059]).

22. Claims 28-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Osamu et al., in view of Masumoto et al., and Yamahira et al. as applied to claim 27 above, and further in view of Uba.

Regarding claims 28-30, Osamu modified by Masumoto and Yamahira teach an injection hole in Osamu's electric insulating plate (11) overlapping Osamu's injection hole (14) for electrolysis solutions (Applicant's electrolytic solution inlet), but is silent as

to one surface of the electric insulating plate (11) being greater than another surface of the electric insulating plate (11).

Uba teaches channels (36) adapted to facilitate injection of an electrolyte (Applicant's electrolytic solution) in the neighborhood of the central vent opening (42) whereby electrolyte is delivered (Applicant's electrolytic solution inlet). Uba teaches that because of these channels the electrolyte is distributed uniformly to the cell (figures 4 and 6; column 3, lines 35-39 and lines 56-60).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize Uba's channels with Osamu's injection hole (14) for electrolysis solutions (Applicant's electrolytic solution inlet), because these channels cause the electrolyte to be distributed uniformly to the cell, as taught by Uba (column 3, lines 56-60).

Once these channels are in Osamu's electric insulating plate (11) the injection hole would have an area on the surface facing the inside of the case (1) (Applicant's can) greater than that on a surface facing the outside of the case (1) (Applicant's can).

Regarding claims 31-33, Osamu, Masumoto and Yamahira teach an injection hole in Osamu's electric insulating plate (11) overlapping Osamu's injection hole (14) for electrolysis solutions (Applicant's electrolytic solution inlet), but is silent as to further comprising a channel.

Uba teaches channels (36) adapted to facilitate injection of an electrolyte (Applicant's electrolytic solution) in the neighborhood of the central vent opening (42) whereby electrolyte is delivered (Applicant's electrolytic solution inlet). One end of the

channels (36) is connected to the central vent opening (42) whereby electrolyte is delivered (Applicant's electrolytic solution inlet). The channels (36) are linearly shaped and arranged radially (Applicant's spirally) in the neighborhood of the central vent opening (42) whereby electrolyte is delivered (Applicant's electrolytic solution inlet) (figures 4 and 6; column 3, lines 51-60). Uba teaches that because of these channels the electrolyte is distributed uniformly to the cell (column 3, lines 35-39 and lines 56-60).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize Uba's channels with Osamu's injection hole (14) for electrolysis solutions (Applicant's electrolytic solution inlet), because these channels cause the electrolyte to be distributed uniformly to the cell, as taught by Uba (column 3, lines 56-60).

23. Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Osamu et al. in view of Masumoto et al., Yamahira et al., and Uba as applied to claim 31 above, and further in view of Planchat.

Osamu et al. in view of Uba teaches Osamu in view of Yamhira's injection hole with Uba's channels (36). Uba teaches that these channels have depths that are 1/8 inch, which is 3 mm (column 5, lines 28-30).

Planchat teaches channels (31 and 34) used to disperse electrolyte from an electrolyte inlet orifice (30) (Applicant's electrolytic solution inlet) are 0.2 to 0.3 mm, which falls within Applicant's range of 0.1 to 0.5 mm (figure 3; column 3, lines 28-39). Planchat teaches that the shapes and depths of the channels are chosen in order to

obtain a uniform flowrate, and that the configuration having channels at this depth ensures that electrolyte is uniformly distributed (column 3, lines 14-45).

It would have been obvious to one of ordinary skill in the art at the time the invention was made for Osamu et al. in view of Uba's channels to substitute Uba's depth of 3 mm for Planchat's depth 0.2 to 0.3 mm, because the shapes and depths of the channels are chosen in order to obtain a uniform flowrate, and that the configuration having channels at this depth ensures that electrolyte is uniformly distributed, as taught by Planchat (column 3, lines 14-45).

24. Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Osamu et al. in view of Masumoto et al., and Yamahira et al. as applied to claim 27 above, and further in view of Pfeiffer.

Osamu in view of Yamahira teach an injection hole overlapping the injection hole (14) for electrolysis solutions (Applicant's electrolytic solution inlet), but is silent as to the injection hole having a sloping cross-section.

Pfeiffer teaches a liquid drop-propelling nozzle (10) which is utilized as a liquid inlet from outside to inside a chamber. This drop-propelling nozzle's (10) chamber wall widens out conically from the edge of the nozzle opening (at the surface of the outside of the chamber). Pfeiffer's liquid drop-propelling nozzle (10) (Applicant's inlet) has an area on one surface of the top of the chamber (Applicant's cap plate) different from that on another surface of the top of the chamber (Applicant's cap plate). Pfeiffer teaches that the opening size as well as the conicity of the drop-propelling nozzle's (10) chamber wall can be chosen in dependence on the viscosity of the liquid to be sprayed out

(Abstract). Spraying liquids causes them to be more uniformly distributed to the space that they are sprayed into.

Osamu and Pfeiffer are analogous art because they are both concerned with a similar problem solving area, namely, using inlets for introducing liquids into a container.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize Pfeiffer's conical shape (Applicant's an area on one surface of the cap plate different from that on another surface of the cap plate) for Osamu in view of Yamahira's injection hole, because Osamu and Pfeiffer are both teaching about liquid inlets, and Pfeiffer's conical shape would spray Osamu's electrolysis solution into the cell case (1) which would more uniformly distribute Osamu's electrolysis solution.

Correspondence/Contact Information

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Susy Tsang-Foster can be reached on (571)272-1293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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